



OPTIMAL ALLOCATION OF AIR CONDITIONING SERVICES: A CASE STUDY FOR A HOTEL IN SRI LANKA

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Abstract

Tourism industry is one of the key players in Sri Lankan economy. With the long run internal conflict, Sri Lankan tourism industry had a negative growth in the last few decades. Not only that, but also due to global economic meltdown, almost all the industries all over the world are facing an extremely hard time. The increase of global warming, with its effects on North Pole glaciers, which have started to melt, the entire world has started to be concerned on the concept of the "green house effect".

With global economic crisis and the "go green" concept most of the industries have started to practice cost reduction and energy saving methods in order to make their industries profitable. The situation in Sri Lanka's industry has no difference from that and especially the tourism industry has started to implement such methods.

In this thesis a case study has been carried out at one of the five star category resort type hotels in down south, Heritance Ahungalla, to analyze the pattern of energy consumption in that hotel in order to implement a method to reduce their production cost, as energy is one of the highest components in the hotel's expenses.

The chilled water distribution system has been studied and the hotel was divided to five sections based on that. Cooling load requirement is correlated with the number of occupied rooms hence the energy could be saved by introducing wing operation to the hotel room allocation system.

A practical evaluation on wing operation was carried out only based on the energy consumption and a theoretical evaluation was also carried out based on both the energy consumption and the profit. Results showed the energy could be saved by introducing "wing operation" to the system of allocation of rooms in the hotel.

With the wing operation, it is required to implement automatic operation of chiller plant as well as isolation of each wing from the hotel main system as the wing



operation is highly cost effective. That could be achieved with introduction of building management system to the hotel.